

REMARKS

Claims 1, 5, 7, and 9-15 are pending in the application. Claims 1, 5, 7, and 9-14 have been rejected. Claim 1 herewith is amended. New claim 15 has been added. Favorable reconsideration of the application in view of the following remarks is respectfully requested

Claims 1, 5, 7, and 9-14 have been rejected under 35 U.S.C. §103(a) as being unpatentable over Santo et al. The Examiner states that Santo et al. teach a recording element comprising alumina particles coated with a silane coupling agent, for example, octadecyldimethyl [3-(trimethoxysilyl) propyl] ammonium chloride. The Examiner further states that: "The experimental modification of this prior art in order to ascertain optimum-operating conditions (e.g., determine the amount of silane coupling agent applied) fails to render applicants' claims patentable in the absence of unexpected results."

This rejection is respectfully traversed. U.S. Patent 5,965,252 to Santo et al. discloses a printing medium with an ink-receiving layer comprising an alumina hydrate surface treated with a coupling agent. However, there is a problem with this element in that the coupling agents are used to render the surface of the alumina hydrate hydrophobic. Such an element would exhibit poor image quality, as ink jet inks will not wet the surface of the element uniformly. In distinct contrast, the present invention positively requires a silane coupling agent having a hydrophilic, organic moiety. Santo, for example, employs octadecyltrimethoxysilane in the Example (See Table 3 in col. 25 of Santo et al.), whereas Applicants employ octadecyldimethyl [3-(trimethoxysilyl) propyl] ammonium chloride in their Examples. Although Santo et al. appears to accidentally mention a single ionic silane coupling agent (in column 5, lines 11-12) at the end of a very long list of coupling agents, he does not use it in any of the Examples and, in fact, claims making the surface of alumina hydrate "hydrophobic using a coupling agent."

The skilled artisan would recognize octadecyl to be a hydrophobic organic moiety and an organic group comprising ammonium chloride to be ionic and hence hydrophilic. All the silane coupling agents in the Examples of Santo et al., listed in Table 3, have an organic moiety that has a LogP greater than 0, meaning that fragment extending from the surface of the inorganic particle, would prefer organic solvent to water. None of the silane coupling agents in Table 3 are ionic or comprise

a tertiary amine that is ionizable at low pH like dihydroimidazole propyl. The organic moieties in Table 3 of Santo et al. are specifically aminopropyl, glycidoxypyl, mercaptopropyl, methacryloxypropyl, and octadecyl. In contrast, the organic moieties used in the present Examples, are NNN-tributyl ammonium ammonium propyl, NNN-octadecyldimethylammonium propyl, NNN-trimethyl ethyl benzyl, and dihydroimidazole, which contain an ionic or (in the case of dihydroimidazole) a tertiary amino group that is relatively ionizable at the pH necessary to attach the coupling agent to the inorganic particles, i.e. the hydrophilic organic moiety of claim 1. Thus, this hydrophilic organic moiety extends from the surface of the inorganic particle, the other groups attached to the silane coupling agent disappearing during attachment following a hydrolysis reaction as explained in the present specification.

In view thereof, it follows that the subject matter of the claims 1, 5, 7, and 9-14 would not have been obvious in view of Santo et al. at the time the invention was made.

Claims 1, 5, and 9-14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Kato. It is the conclusion of the Examiner that "The experimental modification of this prior art in order to ascertain optimum-operating conditions (e.g., determine compositional relative proportions) fails to render applicants' claims patentable in the absence of unexpected results."

The rejection is respectfully traversed. Applicants take the position that Kato is also directed to the use of silane coupling groups having non-hydrophilic organic moieties, as disclosed in Table 1. In fact, Kato is directed to a water resistant resin coating, as stated in claim 1.

In view thereof, it follows that the subject matter of the claims 1, 5, and 9-14 would not have been obvious in view of Kato at the time the invention was made.

Applicants have reviewed the prior art made of record and believe that singly or in any suitable combination, they do not render Applicants' claimed invention unpatentable.

It is believed that the foregoing is a complete response to the Office Action and that the claims are in condition for allowance. Favorable reconsideration and early passage to issue is therefore earnestly solicited.

Respectfully submitted,



Chris P. Konkol
Attorney for Applicant(s)
Registration No. 34,117

CPK:clb
Rochester, NY 14650
Telephone: (585) 722-0452
Facsimile: (585) 477-1148